

## WHAT IS CLAIMED IS:

1. A QoS server, which is used in a network system comprising: a network, main signal gateways for accommodating outside networks in the network and executing conversion of main signals between the network and the outside networks, a call setup server for  
5 setting up a call, and signaling gateways for executing conversion of signaling signals between the call setup server and the outside networks, including:

a network monitoring section for monitoring the network state;

10 a network state database for storing network state information obtained at the network monitoring section;

a resource allocation computing section for computing resource allocation for applications based on resource requirements with reference to the network state information;

15 a resource allocation database for storing resource allocation information; and

a network setup section for setting up resource allocation on the network based on the resource allocation information.

2. The QoS server claimed in claim 1, wherein resource allocation is conducted based on the resource requirements from a resource requiring section that makes resource requirements located in the call setup server.

3. The QoS server claimed in claim 1, wherein resource allocation is conducted based on the resource requirements from a resource requiring section that makes resource requirements located in the main signal gateway.

4. A QoS server, which is used in a network system

09988653-112001

comprising: a network being connected to outside networks, and a policy server for deciding a policy for the network and setting up resource allocation on the network, including:

- 5           a network monitoring section for monitoring the network state;
- a network state database for storing network state information obtained at the network monitoring section; and
- a resource allocation computing section for computing resource allocation for applications based on resource requirements with reference
- 10   to the network state information and notifying the policy server of resource allocation information.

5. The QoS server claimed in claim 4, wherein resource allocation is conducted based on the resource requirements from a resource requiring section that makes resource requirements located in the policy server.

6. A QoS server for setting up resource allocation on a network which is connected to outside networks, including:

- a network monitoring section for monitoring the network state;
- a network state database for storing network state information
- 5   obtained at the network monitoring section;
- a user information database for storing setup information;
- a resource requiring section for making resource requirements with reference to the network state information in the network state database and the setup information in the user information database;
- 10           a resource allocation computing section for computing resource allocation for applications based on the resource requirements with reference to the network state information;
- a resource allocation database for storing resource allocation information; and

09988653-12001

15 a network setup section for setting up resource allocation on the network based on the resource allocation information.

7. The QoS server claimed in claim 1, which previously obtains traffic requirements and resource requirements to compute path and resource allocation, and conducts path and resource allocation before a call arrives on the network.

8. The QoS server claimed in claim 2, which previously obtains traffic requirements and resource requirements to compute path and resource allocation, and conducts path and resource allocation before a call arrives on the network.

9. The QoS server claimed in claim 3, which previously obtains traffic requirements and resource requirements to compute path and resource allocation, and conducts path and resource allocation before a call arrives on the network.

10. The QoS server claimed in claim 4, which previously obtains traffic requirements and resource requirements to compute path and resource allocation, and conducts path and resource allocation before a call arrives on the network.

11. The QoS server claimed in claim 5, which previously obtains traffic requirements and resource requirements to compute path and resource allocation, and conducts path and resource allocation before a call arrives on the network.

12. The QoS server claimed in claim 6, which previously obtains traffic requirements and resource requirements to compute path

and resource allocation, and conducts path and resource allocation before a call arrives on the network.

13. The QoS server claimed in claim 1, which obtains traffic requirements and resource requirements of calls to compute path and resource allocation for an aggregate of calls, and conducts path and resource allocation.

14. The QoS server claimed in claim 2, which obtains traffic requirements and resource requirements of calls to compute path and resource allocation for an aggregate of calls, and conducts path and resource allocation.

15. The QoS server claimed in claim 3, which obtains traffic requirements and resource requirements of calls to compute path and resource allocation for an aggregate of calls, and conducts path and resource allocation.

16. The QoS server claimed in claim 4, which obtains traffic requirements and resource requirements of calls to compute path and resource allocation for an aggregate of calls, and conducts path and resource allocation.

17. The QoS server claimed in claim 5, which obtains traffic requirements and resource requirements of calls to compute path and resource allocation for an aggregate of calls, and conducts path and resource allocation.

18. The QoS server claimed in claim 6, which obtains traffic requirements and resource requirements of calls to compute path and

0998863-12001

resource allocation for an aggregate of calls, and conducts path and resource allocation.

19. The QoS server claimed in claim 1, which obtains traffic requirements and resource requirements of additional aggregate calls, when the number of connected calls exceeds a certain threshold, to re-compute path and resource allocation, and renews the threshold after  
5 additional path and resource allocation.

20. The QoS server claimed in claim 2, which obtains traffic requirements and resource requirements of additional aggregate calls, when the number of connected calls exceeds a certain threshold, to re-compute path and resource allocation, and renews the threshold after  
5 additional path and resource allocation.

21. The QoS server claimed in claim 3, which obtains traffic requirements and resource requirements of additional aggregate calls, when the number of connected calls exceeds a certain threshold, to re-compute path and resource allocation, and renews the threshold after  
5 additional path and resource allocation.

22. The QoS server claimed in claim 4, which obtains traffic requirements and resource requirements of additional aggregate calls, when the number of connected calls exceeds a certain threshold, to re-compute path and resource allocation, and renews the threshold after  
5 additional path and resource allocation.

23. The QoS server claimed in claim 5, which obtains traffic requirements and resource requirements of additional aggregate calls, when the number of connected calls exceeds a certain threshold, to

0998553-11001

re-compute path and resource allocation, and renews the threshold after  
5 additional path and resource allocation.

24. The QoS server claimed in claim 6, which obtains traffic requirements and resource requirements of additional aggregate calls, when the number of connected calls exceeds a certain threshold, to re-compute path and resource allocation, and renews the threshold after  
5 additional path and resource allocation.

25. The QoS server claimed in claim 1, which obtains a request for resource release for aggregate calls when the number of connected calls underruns a certain threshold, and renews the threshold after resource release.

26. The QoS server claimed in claim 2, which obtains a request for resource release for aggregate calls when the number of connected calls underruns a certain threshold, and renews the threshold after resource release.

27. The QoS server claimed in claim 3, which obtains a request for resource release for aggregate calls when the number of connected calls underruns a certain threshold, and renews the threshold after resource release.

28. The QoS server claimed in claim 4, which obtains a request for resource release for aggregate calls when the number of connected calls underruns a certain threshold, and renews the threshold after resource release.

29. The QoS server claimed in claim 5, which obtains a

0998663-11001  
"SECRET"

request for resource release for aggregate calls when the number of connected calls underruns a certain threshold, and renews the threshold after resource release.

30. The QoS server claimed in claim 6, which obtains a request for resource release for aggregate calls when the number of connected calls underruns a certain threshold, and renews the threshold after resource release.

31. The QoS server claimed in claim 1, further including a user information database for storing the resource requirements, which monitors traffic flow corresponding to the allocated resources, and when detecting that the required quality is not satisfied, re-computes path and resource allocation with reference to the user information database to alter path and resource allocation.

32. The QoS server claimed in claim 2, further including a user information database for storing the resource requirements, which monitors traffic flow corresponding to the allocated resources, and when detecting that the required quality is not satisfied, re-computes path and resource allocation with reference to the user information database to alter path and resource allocation.

33. The QoS server claimed in claim 3, further including a user information database for storing the resource requirements, which monitors traffic flow corresponding to the allocated resources, and when detecting that the required quality is not satisfied, re-computes path and resource allocation with reference to the user information database to alter path and resource allocation.

34. The QoS server claimed in claim 4, further including a user information database for storing the resource requirements, which monitors traffic flow corresponding to the allocated resources, and when detecting that the required quality is not satisfied, re-computes path and resource allocation with reference to the user information database to alter the path and resource allocation.

35. The QoS server claimed in claim 5, further including a user information database for storing the resource requirements, which monitors traffic flow corresponding to the allocated resources, and when detecting that the required quality is not satisfied, re-computes path and resource allocation with reference to the user information database to alter the path and resource allocation.

36. The QoS server claimed in claim 6, which monitors traffic flow corresponding to the allocated resources, and when detecting that the required quality is not satisfied, re-computes path and resource allocation to alter the path and resource allocation.

37. A resource allocation control method in a network system comprising: a network, main signal gateways for accommodating outside networks in the network and executing conversion of main signals between the network and the outside networks, a call setup server for setting up a call, and signaling gateways for executing conversion of signaling signals between the call setup server and the outside networks, including the steps of:

monitoring the network state;

storing network state information in a network state database;

computing resource allocation for applications based on resource requirements with reference to the network state information



stored in the network state database;

storing resource allocation information in a resource allocation database; and

15           setting up resource allocation on the network based on the resource allocation information stored in the resource allocation database

38. The resource allocation control method claimed in claim 37, wherein resource allocation is conducted based on the resource requirements from the call setup server.

39. The resource allocation control method claimed in claim 37, wherein resource allocation is conducted based on the resource requirements from the main signal gateway.

40. A resource allocation control method in a network system comprising: a network being connected to outside networks, and a policy server for deciding a policy for the network and setting up resource allocation on the network, including the steps of:

5           monitoring the network state;  
          storing network state information in a network state database;  
          computing resource allocation for applications based on resource requirements with reference to the network state information stored in the network state database; and  
10          notifying the policy server of resource allocation information.

41. The resource allocation control method claimed in claim 40, wherein the resource requirements are produced in the policy server.

42. A resource allocation control method for setting up resource allocation on a network which is connected to outside networks,

0998653-12001  
"002T" 0998653

including the steps of:

- monitoring the network state;
- 5 storing network state information in a network state database;
- making resource requirements with reference to the network state information stored in the network state database and setup information stored in a user information database;
- computing resource allocation for applications based on the
- 10 resource requirements with reference to the network state information stored in the network state database;
- storing resource allocation information in a resource allocation database; and
- setting up resource allocation on the network based on the
- 15 resource allocation information stored in the resource allocation database.

43. The resource allocation control method claimed in claim 37, wherein traffic requirements and resource requirements are previously obtained to compute path and resource allocation, and path and resource allocation is conducted before a call arrives on the network.

44. The resource allocation control method claimed in claim 38, wherein traffic requirements and resource requirements are previously obtained to compute path and resource allocation, and path and resource allocation is conducted before a call arrives on the network.

45. The resource allocation control method claimed in claim 39, wherein traffic requirements and resource requirements are previously obtained to compute path and resource allocation, and path and resource allocation is conducted before a call arrives on the network.

0998653-12001

46. The resource allocation control method claimed in claim 40, wherein traffic requirements and resource requirements are previously obtained to compute path and resource allocation, and path and resource allocation is conducted before a call arrives on the network.

47. The resource allocation control method claimed in claim 41, wherein traffic requirements and resource requirements are previously obtained to compute path and resource allocation, and path and resource allocation is conducted before a call arrives on the network.

48. The resource allocation control method claimed in claim 42, wherein traffic requirements and resource requirements are previously obtained to compute path and resource allocation, and path and resource allocation is conducted before a call arrives on the network.

49. The resource allocation control method claimed in claim 37, wherein traffic requirements and resource requirements of calls are obtained to compute path and resource allocation for an aggregate of calls, and path and resource allocation is conducted.

50. The resource allocation control method claimed in claim 38, wherein traffic requirements and resource requirements of calls are obtained to compute path and resource allocation for an aggregate of calls, and path and resource allocation is conducted.

51. The resource allocation control method claimed in claim 39, wherein traffic requirements and resource requirements of calls are obtained to compute path and resource allocation for an aggregate of calls, and path and resource allocation is conducted.

52. The resource allocation control method claimed in claim 40, wherein traffic requirements and resource requirements of calls are obtained to compute path and resource allocation for an aggregate of calls, and path and resource allocation is conducted.

53. The resource allocation control method claimed in claim 41, wherein traffic requirements and resource requirements of calls are obtained to compute path and resource allocation for an aggregate of calls, and path and resource allocation is conducted.

54. The resource allocation control method claimed in claim 42, wherein traffic requirements and resource requirements of calls are obtained to compute path and resource allocation for an aggregate of calls, and path and resource allocation is conducted.

55. The resource allocation control method claimed in claim 37, wherein when the number of connected calls exceeds a certain threshold, traffic requirements and resource requirements of additional aggregate calls are obtained to re-compute path and resource allocation,  
5 and the threshold is renewed after additional path and resource allocation.

56. The resource allocation control method claimed in claim 38, wherein when the number of connected calls exceeds a certain threshold, traffic requirements and resource requirements of additional aggregate calls are obtained to re-compute path and resource allocation,  
5 and the threshold is renewed after additional path and resource allocation.

57. The resource allocation control method claimed in claim

09080531 11001

39, wherein when the number of connected calls exceeds a certain threshold, traffic requirements and resource requirements of additional aggregate calls are obtained to re-compute path and resource allocation, and the threshold is renewed after additional path and resource allocation.

58. The resource allocation control method claimed in claim 40, wherein when the number of connected calls exceeds a certain threshold, traffic requirements and resource requirements of additional aggregate calls are obtained to re-compute path and resource allocation, and the threshold is renewed after additional path and resource allocation.

59. The resource allocation control method claimed in claim 41, wherein when the number of connected calls exceeds a certain threshold, traffic requirements and resource requirements of additional aggregate calls are obtained to re-compute path and resource allocation, and the threshold is renewed after additional path and resource allocation.

60. The resource allocation control method claimed in claim 42, wherein when the number of connected calls exceeds a certain threshold, traffic requirements and resource requirements of additional aggregate calls are obtained to re-compute path and resource allocation, and the threshold is renewed after additional path and resource allocation.

61. The resource allocation control method claimed in claim 37, wherein when the number of connected calls underruns a certain threshold, a request for resource release for reduced calls is obtained and

the threshold is renewed after resource release.

62. The resource allocation control method claimed in claim 38, wherein when the number of connected calls underruns a certain threshold, a request for resource release for reduced calls is obtained and the threshold is renewed after resource release.

63. The resource allocation control method claimed in claim 39, wherein when the number of connected calls underruns a certain threshold, a request for resource release for reduced calls is obtained and the threshold is renewed after resource release.

64. The resource allocation control method claimed in claim 40, wherein when the number of connected calls underruns a certain threshold, a request for resource release for reduced calls is obtained and the threshold is renewed after resource release.

65. The resource allocation control method claimed in claim 41, wherein when the number of connected calls underruns a certain threshold, a request for resource release for reduced calls is obtained and the threshold is renewed after resource release.

66. The resource allocation control method claimed in claim 42, wherein when the number of connected calls underruns a certain threshold, a request for resource release for reduced calls is obtained and the threshold is renewed after resource release.

67. The resource allocation control method claimed in claim 37, wherein:

a user information database stores the resource requirements;

0958853-112001

and

5 traffic flow corresponding to the allocated resources is monitored, and when it is detected that the required quality is not satisfied, path and resource allocation is re-computed with reference to the user information database and altered.

68. The resource allocation control method claimed in claim 38, wherein:

a user information database stores the resource requirements;  
and

5 traffic flow corresponding to the allocated resources is monitored, and when it is detected that the required quality is not satisfied, path and resource allocation is re-computed with reference to the user information database and altered.

69. The resource allocation control method claimed in claim 39, wherein:

a user information database stores the resource requirements;  
and

5 traffic flow corresponding to the allocated resources is monitored, and when it is detected that the required quality is not satisfied, path and resource allocation is re-computed with reference to the user information database and altered.

70. The resource allocation control method claimed in claim 40, wherein:

a user information database stores the resource requirements;  
and

5 traffic flow corresponding to the allocated resources is  
monitored, and when it is detected that the required quality is not

satisfied, path and resource allocation is re-computed with reference to the user information database and altered.

71. The resource allocation control method claimed in claim 41, wherein:

a user information database stores the resource requirements;

and

5 traffic flow corresponding to the allocated resources is monitored, and when it is detected that the required quality is not satisfied, path and resource allocation is re-computed with reference to the user information database and altered.

72. The resource allocation control method claimed in claim 42, wherein traffic flow corresponding to the allocated resources is monitored, and when it is detected that the required quality is not satisfied, path and resource allocation is re-computed and altered.

00988653 11001